

WHAT IS CLAIMED IS:

5

1. A software update device capable of communicating with a target update device via a network, the software update device comprising:

10 a certification information setting unit for generating a first certification information, and transmitting the first certification information to the target update device via a first communication path;

15 a certification requesting unit for transmitting a second certification information to the target update device, and requesting the target update device to execute a certification process with the first and second certification information; and

20 a transmitting unit for transmitting an update software for updating a software of the target update device to the target update device via a second communication path when the certification process succeeds, the second communication path having a process load less than that of the first communication path.

25

2. The software update device as claimed in
claim 1, further comprising a certification information
5 invalidation requesting unit for requesting the target
update device to invalidate the first certification
information subsequent to the transmittal of the update
software.

10

3. The software update device as claimed in
claim 1, wherein the software of the target update
15 device is updated when requested by an external unit.

20 4. The software update device as claimed in
claim 3, further comprising a notification unit for
notifying a result of updating the software of the
target update device to the external unit.

25

5. The software update device as claimed in
claim 1, wherein the first communication path is a
5 communication path for communicating by using SSL.

10 6. The software update device as claimed in
claim 1, wherein the second communication path is a
communication path for communicating by using FTP.

15

7. The software update device as claimed in
claim 1, wherein data transmitted via the first
communication path is encoded, wherein data transmitted
20 via the second communication path is not encoded.

25 8. A software update system comprising:

a software update device; and
a target update device in communication with
the software update device;

wherein the software update device has:

- 5 a certification information setting unit
for generating a first certification information, and
transmitting the first certification information to a
target update device via a first communication path,
a certification requesting unit for
10 transmitting a second certification information to the
target update device, and requesting the target update
device to execute a certification process with the first
and second certification information, and
a transmitting unit for transmitting an
15 update software for updating a software of the target
update device to the target update device via a second
communication path when the certification process
succeeds, the second communication path having a process
load less than that of the first communication path;
20 wherein the target update device has:
a memory unit for storing the first
certification information,
a certification unit for executing the
certification process by using the first and second
25 certification information when requested to execute the

certification process, and returning a result of the
certification process to the software update device, and
an updating unit for receiving the update
software when the certification process succeeds, and
5 updating the software of the target update device.

10 9. The software update system as claimed in
claim 8, wherein the software update device further has
a certification information invalidation requesting unit
for transmitting an invalidation request to invalidate
the first certification information to the target update
15 device subsequent to the transmittal of the update
software, and wherein the target update device further
has a certification information invalidating unit for
invalidating the first certification information when
receiving the invalidation request.

20

10. The software update system as claimed in
25 claim 8, wherein the target update device further has:

a restarting unit for restarting the target update device after the software is updated by the updating unit,

5 a start notification transmitting unit for transmitting a start notification informing that the target update device is started to the software update device when the target update device is started, and

a version information transmitting unit for transmitting version information of the target update device in response to a request from the software update device;

10

wherein the software update device further has a version information unit for obtaining the version information by requesting the target update device to transmit the version information when the start notification is received after the transmittal of the update software, and confirming the update by comparing with version information of the transmitted update software.

15

20

11. The software update system as claimed in claim 8, wherein the first communication path is a

25

communication path for communicating by using SSL.

5

12. The software update system as claimed in claim 8, wherein the second communication path is a communication path for communicating by using FTP.

10

13. The software update system as claimed in claim 8, wherein data transmitted via the first communication path is encoded, wherein data transmitted via the second communication path is not encoded.

20

14. A software update method using a software update device capable of communicating with a target update device via a network, the method comprising the steps of:

25 generating a first certification information;

transmitting the first certification
information to the target update device via a first
communication path;

transmitting a second certification
5 information to the target update device;

requesting the target update device to execute
a certification process with the first and second
certification information; and

transmitting an update software for updating a
10 software of the target update device to the target
update device via a second communication path when the
certification process succeeds, the second communication
path having a process load less than that of the first
communication path.

15

15. The software update method as claimed in
20 claim 14, further comprising a step of requesting the
target update device to invalidate the first
certification information subsequent to the transmittal
of the update software.

25

16. The software update method as claimed in
claim 14, wherein the software of the target update
5 device is updated when requested by an external unit.

10 17. The software update device as claimed in
claim 16, further comprising a step of notifying a
result of updating the software of the target update
device to the external unit.

15

18. The software update method as claimed in
claim 14, further comprising the steps of:

20 receiving a start notification informing that
the target update device is started;

obtaining version information of the software
of the target update device from the target update
device when the start notification is received after the
25 transmittal of the update software; and

confirming the update by comparing with
version information of the transmitted update software.

5

19. The software update method as claimed in
claim 14, wherein the first communication path is a
communication path for communicating by using SSL.

10

20. The software update method as claimed in
claim 14, wherein the second communication path is a
communication path for communicating by using FTP.

20

21. The software update method as claimed in
claim 14, wherein data transmitted via the first
communication path is encoded, wherein data transmitted
via the second communication path is not encoded.

25

22. A program to be installed or executed by
5 a computer for controlling a software update device
capable of communicating with a target update device via
a network, the program comprising:
a generating function for generating a first
certification information;
10 a transmitting function for transmitting the
first certification information to the target update
device via a first communication path;
a transmitting function for transmitting a
second certification information to the target update
15 device;
a requesting function for requesting the
target update device to execute a certification process
with the first and second certification information; and
a transmitting function for transmitting an
20 update software for updating a software of the target
update device to the target update device via a second
communication path when the certification process
succeeds, the second communication path having a process
load less than that of the first communication path.

25

23. The program as claimed in claim 22,
5 further comprising a function of requesting the target
update device to invalidate the first certification
information subsequent to the transmittal of the update
software.

10

24. The program as claimed in claim 22,
wherein the software of the target update device is
15 updated when requested by an external unit.

20 25. The program as claimed in claim 24,
further comprising a step of notifying a result of
updating the software of the target update device to the
external unit.

25

26. The program as claimed in claim 22,
further comprising the functions of:

5 a receiving function for receiving a start
notification informing that the target update device is
started;

 an obtaining function for obtaining version
information of the software of the target update device
10 from the target update device when the start
notification is received after the transmittal of the
update software; and

 a confirming function for confirming the
update by comparing with version information of the
15 transmitted update software.

20 27. The program as claimed in claim 22,
wherein the first communication path is a communication
path for communicating by using SSL.

25

28. The program as claimed in claim 22,
wherein the second communication path is a communication
path for communicating by using FTP.

5

29. The program as claimed in claim 22,
10 wherein data transmitted via the first communication
path is encoded, wherein data transmitted via the second
communication path is not encoded.

15

30. A communication device capable of
communicating with a software update device via a
network, the communication device comprising:

20 a certification information setting unit for
generating a first certification information, and
transmitting the first certification information to the
software update device;

a certifying unit for executing a
25 certification process, when receiving a second

certification information from the software update device, by comparing the first and second certification information; and

an updating unit for receiving an update
5 software for updating a software of the communication device from the software update device via a second communication path when the certification process succeeds, and updating the software of the communication device, the second communication path having a process
10 load less than that of the first communication path.

15 31. The communication device as claimed in claim 30, further comprising a certification information invalidating unit for invalidating the first certification information subsequent to the transmittal of the update software.

20

32. The communication device as claimed in
25 claim 30, further comprising a control part for

instructing update of the software of the communication device.

5

33. The communication device as claimed in claim 30, further comprising:

a restarting unit for restarting the
10 communication device after the software is updated;
a start notification transmitting unit for transmitting a start notification informing that the communication device is started to the software update device when the communication device is started, and
15 a version information transmitting unit for transmitting version information of the communication device in response to a request from the software update device after the start after the transmittal of the start notification.

20

34. The communication device as claimed in
25 claim 30, wherein the first communication path is a

communication path for communicating by using SSL.

5

35. The communication device as claimed in claim 30, wherein the second communication path is a communication path for communicating by using FTP.

10

36. The communication device as claimed in claim 30, wherein data transmitted via the first communication path is encoded, wherein data transmitted via the second communication path is not encoded.

20

37. A software update system comprising:
a communication device; and
a software update device in communication with the communication device;

25

wherein the communication device has:

update software to the communication device via the second communication path when the certification process succeeds.

5

38. The software update system as claimed in claim 37, wherein the communication device further has a certification information invalidating unit for invalidating the first certification information subsequent to the transmittal of the update software.

15

39. The software update system as claimed in claim 37, wherein the communication device further has:
a restarting unit for restarting the communication device after the software is updated,
a start notification transmitting unit for transmitting a start notification informing that the communication device is started to the software update device when the communication device is started, and
a version information transmitting unit for

25

transmitting version information of the communication device in response to a request from the software update device;

5 wherein the software update device further has a version information unit for obtaining the version information by requesting the communication device to transmit the version information when the start notification is received after the transmittal of the update software, and confirming the update by comparing
10 with version information of the transmitted update software.

15

40. The software update system as claimed in claim 37, wherein the first communication path is a communication path for communicating by using SSL.

20

41. The software update system as claimed in claim 37, wherein the second communication path is a
25 communication path for communicating by using FTP.

5 42. The software update system as claimed in
claim 37, wherein data transmitted via the first
communication path is encoded, wherein data transmitted
via the second communication path is not encoded.

10

 43. A software update method using a
communication device capable of communicating with a
15 software update device via a network, the method
comprising the steps of:

 generating a first certification information;
 transmitting the first certification
information to the software update device;

20 executing a certification process, when
receiving a second certification information from the
software update device, by comparing the first and
second certification information;

 receiving an update software for updating a
25 software of the communication device from the software

update device via a second communication path when the certification process succeeds; and

updating the software of the communication device, the second communication path having a process
5 load less than that of the first communication path.

10 44. The software update method as claimed in claim 43, further comprising a step of invalidating the first certification information subsequent to the transmittal of the update software.

15

 45. The software update method as claimed in claim 43, further comprising a step of updating the
20 software in response to an instruction to update the software from a control part.

25

46. The software update method as claimed in claim 43, further comprising the steps of:

restarting the communication device after the software is updated;

5 transmitting a start notification informing that the communication device is started to the software update device when the communication device is started; and

transmitting version information of the
10 communication device in response to a request from the software update device after the start after the transmittal of the start notification.

15

47. The software update method as claimed in claim 43, wherein the first communication path is a communication path for communicating by using SSL.

20

48. The software update method as claimed in
25 claim 43, wherein the second communication path is a

communication path for communicating by using FTP.

5

49. The software update method as claimed in claim 43, wherein data transmitted via the first communication path is encoded, wherein data transmitted via the second communication path is not encoded.

10

50. A program to be installed or executed by a computer for controlling a communication device capable of communicating with a software update device via a network, the program comprising:

a generating function for generating a first certification information;

20 a transmitting function for transmitting the first certification information to the software update device;

an executing function for executing a certification process, when receiving a second
25 certification information from the software update

device, by comparing the first and second certification information;

5 a receiving function for receiving an update software for updating a software of the communication device from the software update device via a second communication path when the certification process succeeds; and

10 an updating function for updating the software of the communication device, the second communication path having a process load less than that of the first communication path.

15

51. The program as claimed in claim 50, further comprising a function of invalidating the first certification information subsequent to the transmittal of the update software.

20

52. The program as claimed in claim 50,
25 further comprising a function of updating the software

in response to an instruction to update the software
from a control part.

5

53. The program as claimed in claim 50,
further comprising:

10 a restarting function for restarting the
communication device after the software is updated;
a transmitting function for transmitting a
start notification informing that the communication
device is started to the software update device when the
communication device is started; and
15 a transmitting function for transmitting
version information of the communication device in
response to a request from the software update device
after the start after the transmittal of the start
notification.

20

54. The program as claimed in claim 50,
25 wherein the first communication path is a communication

path for communicating by using SSL.

5

55. The program as claimed in claim 50,
wherein the second communication path is a communication
path for communicating by using FTP.

10

56. The program as claimed in claim 50,
wherein data transmitted via the first communication
15 path is encoded, wherein data transmitted via the second
communication path is not encoded.

20